

Residential Fenestration

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EnerComp



Change Treatment of Glazing Area

- Increase prescriptive glazing limit to 20% of conditioned floor area all climate zones
- No compliance credit for smaller glazing area
- New prescriptive limit on West glass = 5% of conditioned floor area

Prescriptive Glazing Limit

- Total Area of glazing allowed without performance tradeoffs
- Currently
 - 16% of conditioned floor area in zones 1, 2, 5, 11, 12, 13, 14, 15, and 16
 - 20% of conditioned floor area in zones 3, 4, 6, 7, 8, 9 and 10
- Proposed
 - 20% of conditioned floor area in all zones

Glazing Area Treatment

- Performance compliance approach
 - Standard Design sets performance target
- Current
 - Standard Design glazing = prescriptive glazing area
- New:
 - Standard Design glazing = proposed house glazing area area
 - or 20% of floor area
 - whichever is smaller

West Glass Limit

- New prescriptive package requirement
- West facing glass \leq 5% of conditioned floor area
- Because West glass is critical to:
 - Cooling sizing
 - Peak electrical demand
 - Comfort

Energy Use for 50% West

Increased Energy Use for West Facing Glass						
CTZ	Annual Energy kBtu/ft2			TDV Energy kBtu/ft2		
	Heating	Cooling	Total	Heating	Cooling	Total
1	-0.10	0.10	0.00	-0.10	0.10	0.10
2	0.10	0.90	1.00	0.10	1.70	1.80
3	0.10	0.50	0.70	0.20	1.10	1.20
4	0.10	0.70	0.80	0.10	1.40	1.50
5	0.00	0.30	0.30	0.10	0.30	0.40
6	0.10	0.50	0.60	0.10	1.30	1.40
7	0.00	0.40	0.40	0.00	1.10	1.10
8	0.00	0.90	0.90	0.00	1.90	1.90
9	0.10	0.90	1.00	0.10	1.90	2.10
10	0.10	1.00	1.10	0.20	2.20	2.30
11	0.10	1.60	1.70	0.10	3.30	3.40
12	0.20	1.50	1.60	0.20	3.00	3.20
13	0.10	1.90	2.00	0.10	3.80	3.90
14	0.20	1.80	2.00	0.20	4.10	4.30
15	0.10	1.60	1.70	0.10	3.60	3.70
16	0.30	1.50	1.90	0.40	3.10	3.40

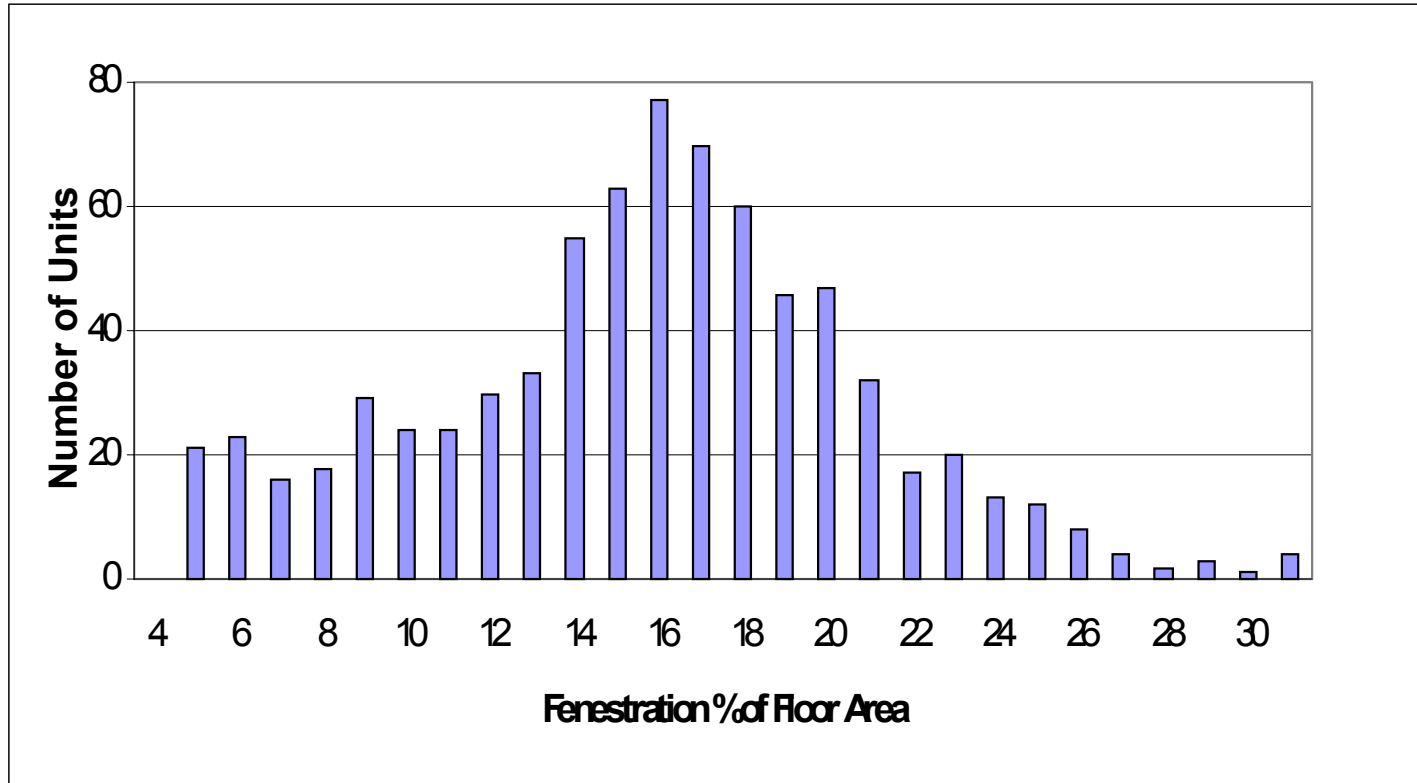
Benefits

- More cost effective energy and demand savings
 - Net total reduction in energy and demand
 - More homes close to package measures
 - Cost effective savings for multi-family buildings
 - And houses with less than prescriptive glass %
 - high performance window are cost effective regardless of glazing area
- Prescriptive packages more useful
 - Larger glazing areas allowed

Glazing Area Distribution

- Frequency of glazing areas in new homes
 - Most important factor, varies widely
 - New RER Study for CALMAC
 - 752 new units built in 1998 and 1999
 - Represents statewide construction
 - Similar results for 1992 CEC study by BSG

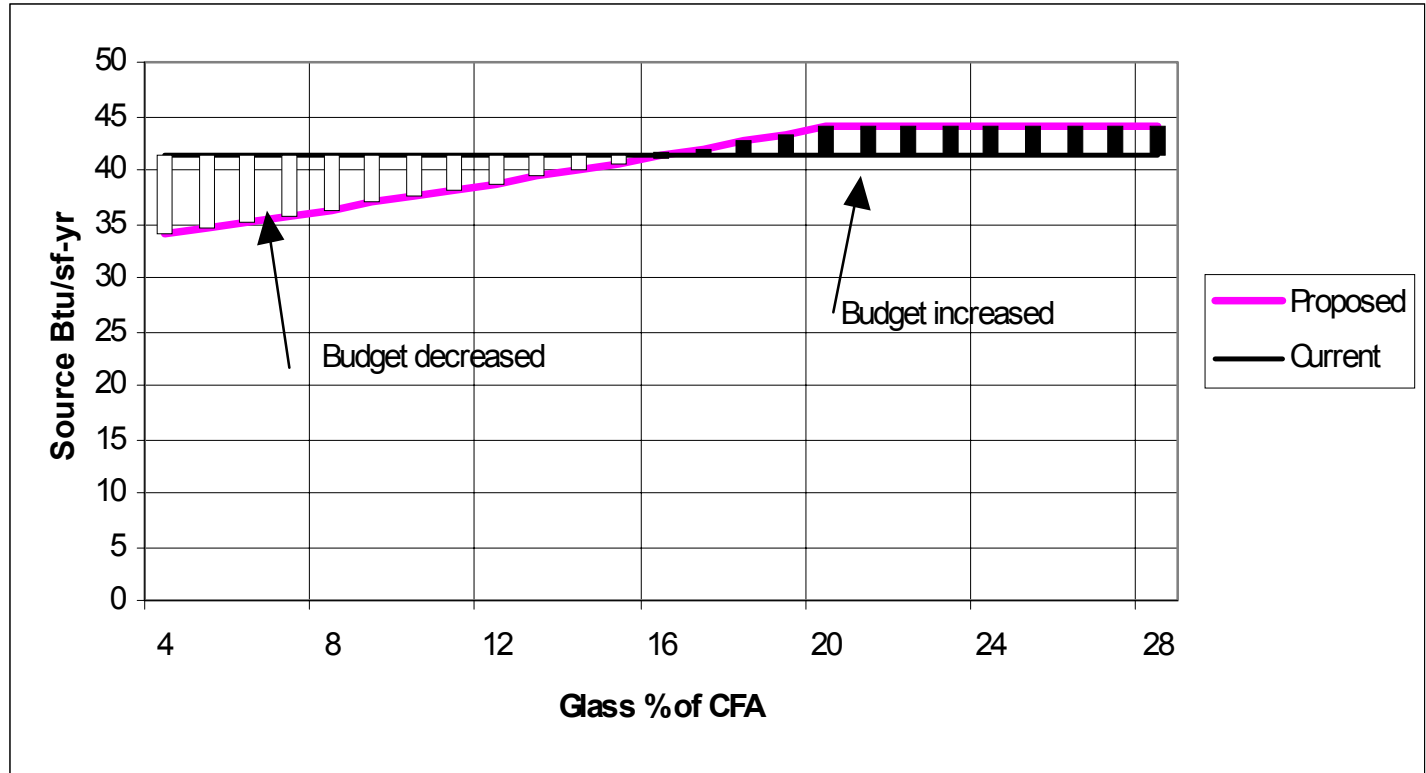
Distribution by Glazing %, N=752



Glazing distribution

- New residential units
 - 15% have glazing area $> 20\%$
 - 45% have glazing $< 16\%$

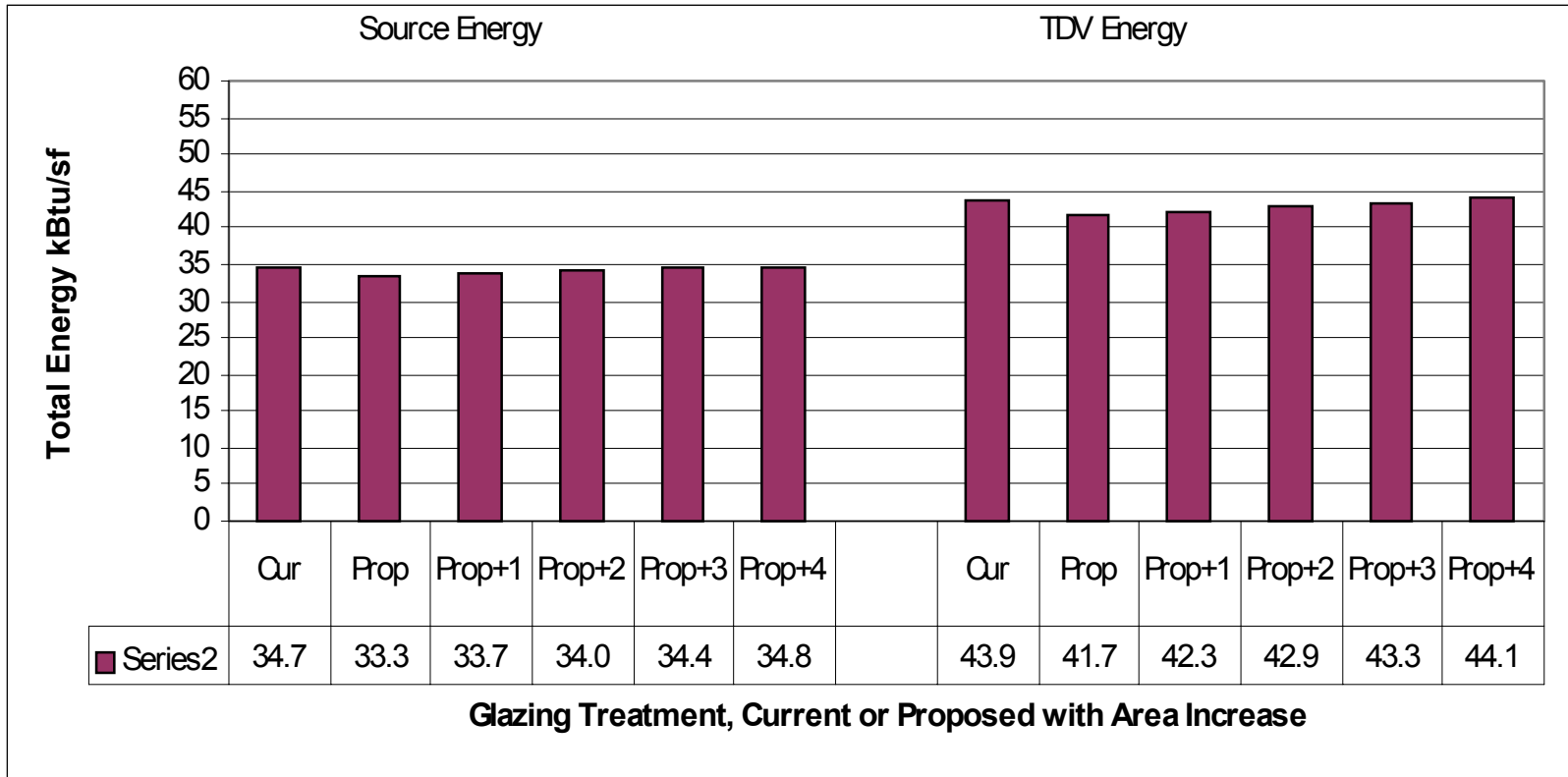
Current and Proposed Energy Budget, CTZ 13



Statewide Impact

- 1761 prototype in 16 zones
- Micropas source and TDV energy
- Statewide area distribution in each zone
- Weighted by relative starts in each zone
- Average for state

Average Energy Use vs Fenestration Area Treatment



Proposal Saves Energy

- Saves 5% of statewide energy if glazing area remains the same
- Even if glazing area of each home increases up to 3% of floor area (20% more glass)